0050008

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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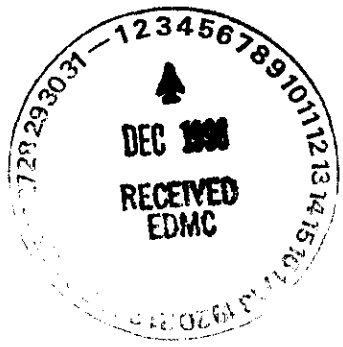
November 16, 1998

Mr. James Rasmussen
U.S. Department of Energy
P.O. Box 550, MSIN: A5-15
Richland, WA 99352



Mr. Anthony Umek
Fluor Daniel Hanford, Incorporated
P.O. Box 1000, MSIN: S7-40
Richland, WA 99352

Ms. Mary Delozier
Lockheed Martin Hanford Corporation
P.O. Box 1500, MSIN: R2-50
Richland, WA 99352

Dear Messrs. Rasmussen, Umek, and Ms. Delozier:

Re: Notice of Correction Resulting from Dangerous Waste Compliance Inspection of Tank SX-104 Conducted December 1997 through April 1998

Thank you for the assistance of the U.S. Department of Energy (USDOE), Fluor Daniel Hanford Company (FDH), and Lockheed Martin Hanford Corporation (LMHC) personnel during the Washington State Department of Ecology's (Ecology) recent inspection of tank SX-104.

Findings from this inspection include the following violations of Washington Administrative Code (WAC) Chapter 173-303 Dangerous Waste Regulations and Code of Federal Regulations (CFR). These violations reflect serious deficiencies in the operation of tank SX-104; however, the corrective measures described below provide for remedy of these violations without suspending operations of the Single-Shell Tank (SST) system. A number of concerns resulting from Ecology's inspection of tank SX-104 have also been identified and listed below.

Regarding the issue of secondary containment, Ecology recognizes the 149 single-shell tanks of Hanford's Tank Farms do not meet the requirements for secondary containment. There is no action required by this notice of correction to provide secondary containment for these tanks. The actions to resolve this requirement are to be addressed by Tri-Party Agreement (TPA) milestones for stabilizing and removing the waste from SSTs and for closure of SSTs.

There has been confusion in the past regarding the requirement to begin pumping tanks that are found to be leaking within 24 hours, or as timely a manner as is possible, as required by WAC 173-303-400. Until USDOE and its contractors can demonstrate that site conditions prevent pumping a leaking tank within 24 hours, Ecology will expect that leaking tanks will be pumped within 24 hours. It is incumbent on USDOE to demonstrate to Ecology's satisfaction any time frame greater that 24 hours for the beginning pumping of any tank identified as leaking.

Ecology is concerned about the facility's ability to determine, in a timely fashion, when a tank is actually leaking. There is no action for this concern required by this letter; however, Ecology will be addressing this issue in the on-going investigation of tank B-111.

VIOLATIONS:

#1 40 CFR 265.194 General Operation Requirements by Reference of WAC-173-303-400, Interim Status Facility Standards.

USDOE and LMHC failed to meet the requirements of 265.194(a) by: placing waste in the ancillary equipment of tank SX-104 that caused the system to fail. The failure by USDOE and LMHC to meet the requirements of 40 CFR 265.194(a) resulted in unnecessary potential exposure of workers to radioactive mixed waste.

During saltwell pumping operations in September 1997, the transfer piping was not operated with adequate controls (heat-trace) to prevent the line from plugging, allowing the system to fail. LMHC management proceeded to place waste into a transfer line knowing the transfer line was not functioning properly and inadequately preparing the other two lines (i.e. not checking to ensure the heat-trace was properly activated). Specific contributing factors include:

- *Not repairing the heat-trace on transfer line SN-233 prior to pumping, even though LMHC management and engineers knew it was not working. The Waste Compatibility Assessment report cited that all transfer lines must be heat-traced;*
- *Not providing agitation or heating for DCRT 244-S as required by the Waste Compatibility Assessment report. The Compatibility Assessment report cited that diluting the waste would not work for this tank waste;*
- *Failing to require heat-trace for transfer lines SN-233 or SL-118 be properly tested;*
- *Failure to perform annual calibration of heat-trace for transfer line SN-249; and*

- *Failure to document in the operating shift log, critical operational checks required (i.e., turning on heat-trace and testing of heat-trace and the non-function of heat-trace for SN-233).*

#2 40 CFR 265.196 Response to Leaks or Spills and Disposition of Leaking or Unfit-For-Use Tank Systems.

USDOE and LMHC failed to meet the requirements of 40 CFR 265.196(a) by adding waste to an unfit-for-use-tank systems.

During the flushing of plugged lines (SN-233, SL-118, and SN-249) contaminated liquids were pumped to three single-shell tanks. There were 492 gallons flushed to single-shell Tank S-107, 100 gallons to single-shell Tank SX-102, 44 gallons to single-shell Tank SX-105. Single-shell tanks (all 149) are determined unfit-for-use and are not allowed to receive additional waste. The Safety Analysis Report #SD-WM-SAR-034, revision 0, paragraph 7.2 requires that, "All liquid wastes generated by the stabilization of single-shell tanks by salt well jet pumping (e.g., line flushes) will be routed to underground transfer or storage tanks." Underground transfer or storage tanks must meet interim status requirements. SSTs do not meet interim status requirements for having additional waste added.

#3 WAC 173-303-320, General Inspection.

USDOE and LHMC failed to meet the requirements of WAC 173-303-320(1)(2), and (3) by failing to:

- Inspect the facility to prevent malfunctions and deterioration that may lead to the release of waste constituents to the environment, or a threat to human health.
- Failing to develop and follow a written schedule for inspecting all monitoring equipment and operating and emergency equipment that help prevent hazards to the environment.
- Failing to remedy problems on a schedule to prevent hazards to the environment.

No inspections were performed on a schedule to prevent malfunctions or repair those found. The transfer line system that plugged due to failed equipment (heat-trace) is required to be operational to pump a leaking tank to prevent both; waste from leaking to the soil, and exposure of workers to unnecessary safety hazards inherent in unplugging a transfer line including extra work in associated pump and valve pits.

Heat-trace for transfer line SN-233 was found to be inoperable, SL-118 was mis-labeled and activated a different line, and SN-249 was not functional because of a burned wire in a control panel that was never checked prior to the transfer. There was an inspection requirement to inspect, track, or repair the malfunctioning heat-trace equipment.

Procedure "Shift Routines and Operating Practices" HNF-IP-0842, Volume II, Section 4.2.1, revision 1b, requires the use of an "Equipment Deficiency List" to document equipment requiring repair. This procedure was not followed for the heat-trace equipment for the SX-104 tank system found malfunctioning.

CONCERNS:

#1 Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement [TPA]) Milestone M-41-22, "Start Interim Stabilization of 6 Single-Shell Tanks by September 30, 1997."

USDOE, FDH, and LMHC failed to properly prepare or execute the beginning of pumping of Tank SX-104 as required by TPA Milestone M-41-22.

USDOE submitted to Ecology a change request (M-41-97-01, Rev. 1) dated December 12, 1997, stating that starting pumping of Tank SX-104 had partially fulfilled Milestone M-41-22. LMHC did not prepare for pumping, did not repair equipment known to be required for pumping (heat-trace), deviated from approved pumping procedures, and began pumping prematurely resulting in damage to the tank system and potential unnecessary exposure of workers to hazardous wastes.

USDOE failed to verify if pumping was actually achieved. LMHC and FDH, although knowing the stabilization effort failed, proceeded to take credit for meeting both the TPA Milestone and the Performance Agreement by claiming that the transfer line plugging was a "pre-existing condition" that was out of their control and that they should not be held accountable for the pre-existing condition. LMHC Stabilization management and the LMHC design basis authority agreed they felt empowered to deviate from the cautions and warnings in the Waste Compatibility Assessment for Pumping of SX-104. The Waste Compatibility Assessment required, as a condition of approval, that adequate heat-trace and agitation be provided prior to transfer.

Note: The TPA, Article XLVII. Force Majeure, 145, states in part, "A Force Majeure shall mean any event arising from causes beyond the control of a Party that causes a delay in or prevents the performance of any obligation under this Agreement, including, but not limited to: . . . B. unanticipated breakage or accident to machinery, equipment or lines of pipe despite reasonably diligent maintenance . . ."

USDOE and LMHC failed to ensure the lines would not get plugged immediately upon pumping were NOT taken. Last minute efforts were focused on starting the pump for SX-104 without due diligence made to pump the tank. The LHMC Manager of Stabilization signed the Management Assessment stating that he reviewed and verified all the heat trace for SX-104 was tested and

calibrated. He failed to check the calibration records or he would have known that transfer line SN-249 had not been calibrated within its required frequency. Note: The date of the attempt to begin pumping allowed for almost exactly enough time to meet the TPA requirement for pumping a minimum of 72 hours. Meeting this time restraint would allow LMHC to receive the bonus provided for beginning pumping of the tank.

USDOE has failed to perform a field assessment of the contractor's work to ensure that proper management of the farms is maintained or to determine if the milestone had been met.

#2 LMHC failed to properly document and track the occurrence of Tank SX-104 exceeding the established liquid level specification criteria (OSD-T-151-00031) as required by the operation manual WHC-IP-0842.

LMHC closed out the original discrepancy report #97-838 on December 30, 1997, even though the problem of the liquid level falling below the specification criteria was not resolved. According to the LMHC tank monitoring staff, after more than two months, the information is still not conclusive as to whether or not the tank is leaking, yet no Occurrence Report or Discrepancy Report are documented to track the problem to conclusion.

Only one aspect of anomalous LOW data was addressed to close discrepancy report (barometric pressure). The more important issue of increasing rate of liquid level decrease was not addressed or tracked.

#3 LMHC failed to immediately notify USDOE of the liquid level falling below the specification criteria as required by the operating specifications for single-shell tanks.

After confirming on December 11, 1997, that the tank liquid level was below the specification limit, LMHC did not immediately notify USDOE. USDOE was not notified until December 15, 1997. Also, Ecology was not notified of the problem until December 15, 1997.

#4 LHMC's occurrence reporting procedure, "Occurrence Reporting and Processing of Operations Information," in WHC-IP-0842 does not have any specific criteria established for the reporting of a suspected or assumed tank leak determined by review of tank leak detection information. This is contrary to the requirements of the supporting USDOE Order for "Occurrence Reporting."

Review of available documentation shows that a known tank leak condition that is not physically visible is not required by LMHC to be reportable as an Occurrence Report. Failure to develop and implement an adequate procedure to ensure proper reporting of a suspected tank leak led to the non-proceduralized methods used to determine if SX-104 is leaking. Failing to have a clear

system to track SX-104 potential tank leaks directly impacts regulatory requirements to determine leaks in a timely manner.

#5 The technical procedure, "Technical Bases for the Leak Detection of Waste Storage Tanks," (WHC-SD-WM-TI-573, revision 0) identifies the actions required if a tank level exceeds a two-sigma or three-sigma-deviation. A two-sigma-deviation requires the tank be put on an "Alert List" and a three-sigma-deviation requires an occurrence report be issued.

LMHC failed to document SX-104 on an Alert List for a two-sigma-deviation or an occurrence report despite a three-sigma-deviation.

#6 Tank Farm Plant Operating Procedure – 241-SX-101, 241-SX-104, and 241-SX105 SST's to 244-S DCRT Saltwell Pumping Procedure # TO-420-070, revision A-0, the procedure used to document the saltwell pumping operation for SX-104. This procedure is used in the field to document the actions required and taken to ensure the saltwell pumping operation is properly performed. The field procedure did not contain the requirements to ensure that heat trace equipment was checked or verified as operational for the transfer. This procedure is inadequate to ensure the tank system did not fail.

The procedure failed to address the need to activate or verify that heat-trace was used.

#7 Operating Logbooks procedure WHC-IP-0842, Volume II, Section 4.11.1, revision 3b, requires documenting specific details in the operating logbooks. The procedure also invokes a "Red Arrow" system to ensure certain types of entries are highlighted for special follow-up. Specific "Red Arrow" details include items such as:

- Operating Specification Document or operating non-conformance conditions.
- Conditions which have the potential for causing equipment damage if not corrected.
- Inoperable equipment which requires that special precaution be taken in system operation.

LMHC failed to document critical information in the operating logbooks. Stabilization management determined prior to saltwell pumping that heat trace for part (SN-233) of the transfer piping was not functional. This was not noted in the operating logbooks or equipment deficiency lists for repair. In September 1997, once the problem was discovered that the heat-trace was not working on any of the three transfer lines, no mention was made in the logbook.

#8 Safety Analysis Report (SAR) 034, paragraph 5.2.4.3 requires saltwell liquid temperatures to be taken.

Operations failed to provide evidence that actual saltwell temperatures were taken. There was no documentation provided in the Saltwell Pumping Procedure used for SX-104. When asked, LHMC referenced waste temperatures as recorded by the SX-104 thermocouple, a piece of equipment the same personnel disregarded as most likely failed in service when questioned about the unexplained waste temperature declines. Knowing the temperature in the saltwell is pertinent determining that waste may be below the temperature required by the Waste Compatibility Assessment.

#9 SAR 034 requires that all Standard Operating Procedures (SOP) be reviewed on a regular basis to assess their effectiveness and adequacy with respect to current facility operating modes and administrative requirements.

The referenced reviews of the saltwell pumping procedure were not performed.

#10 Saltwell pumping procedure for SX-104 (TO-420-070, revision A-0) identifies the transfer lines SN-233, SL-118, and SN-245 as the transfer lines applicable to transfer of SX-104 liquid waste.

It is undocumented in the actual procedure used as to why SN-249 was used in lieu of SN-245. It appears the plans were changed and operations attempted to go through an unapproved line (SN-249) without documenting the change.

#11 SAR 034, paragraph 5.2.2, requires that salt well pumping include a heat–traced discharge jumper.

Tank Waste Remediation System (TWRS) routine Work Request #2W-97-01153/1 identified on September 27, 1997, that the heat trace for the jumper was not connected.

#12 Plugging the transfer lines was described as likely in the Waste Compatibility Assessment if the transfer lines are not properly heated.

The LMHC Preventive Maintenance/Instrument Calibration Program identified that heat-trace controller for transfer line SN-249 was required to be calibrated every 365 days. Calibration of the controller was performed on December 28, 1995, and not again until December 27, 1997, after the failed transfer attempt in September 1997, of SX-104 wastes. Failure to check this piece of equipment may have significantly contributed to the plugging of transfer line SN-249.

#13 The Double Contained Receiving Tank (DCRT) 244-S was referenced in the Waste Compatibility Assessment as requiring agitation or heating to ensure the waste did not solidify in the DCRT. The Waste Compatibility Assessment stated repeatedly that resolving the lack of agitation or heating capability of the DCRT was a condition that must be satisfactorily addressed prior to transfer. The Waste Compatibility Assessment also stated, due to the characteristics of SX-104 wastes it resists dilution to solve clogging problems.

No action was taken to resolve this repeated warning. No resolution was put in place to ensure the DCRT was properly heated or agitated to prevent gelling of the waste. The push to proceed with saltwell pumping to meet a milestone and performance agreement appears to have overshadowed prudent management of the waste.

In order to correct the violations identified in this notice of correction, please complete the following corrective measures within the time frames specified. Failure to correct the violations described in this letter may result in the issuance of an administrative order and/or additional penalties per RCW 70.105.080. A request for additional time to complete the corrective measures identified in the notice of correction must be in writing and received by me for consideration no later than January 5, 1999.

CORRECTIVE MEASURES:

Corrective Measure #1: General Operation Requirements.

Within sixty (60) days, submit a written description of the actions taken to date to preclude recurrence of the SX-104 tank system failing due to plugging of lines.

Within sixty (60) days of receipt of this letter, USDOE, FDH, and LMHC must submit a procedure that documents that a Waste Compatibility Assessment, based on an Ecology approved Data Quality Objective (DQO), will be adhered to for each transfer of waste from SSTs. The procedure shall identify that Waste Compatibility Assessments must include necessary requirements for operating concerns such as providing adequate heat-trace, etc. The procedure and DQO shall be implemented by March 31, 1999.

Corrective Measure #2: Response to Leaks or Spills and Disposition of Leaking or Unfit-For-Use Tank Systems.

Within sixty (60) days of receipt of this letter, USDOE, FDH, and LMHC must submit, for Ecology's approval, a procedure to establish criteria for drainback of flush water to SSTs. The criteria shall include quantity and types of liquids allowed to drainback to SSTs. Until such a procedure is in place USDOE shall receive Ecology approval on a case-by-case basis.

Corrective Measure #3: General Inspection.
Within sixty (60) days, submit a list and written inspection schedule of all monitoring equipment important to interim stabilization of SST waste. This list shall include, as a minimum, equipment such as heat-trace, temperature, and liquid level. The schedule/procedure must document the process to ensure problems with equipment are corrected to prevent hazards to the environment.

Please complete and return the enclosed certificate of compliance to me by January 15, 1999. If you have any questions regarding this letter, please contact me at (509) 736-3022.

Sincerely,

Casey Rudd, Compliance Inspector
Nuclear Waste Program

CR:sb
Enclosure

cc: Mary Lou Blazek, OOE
Administrative Record